BASIC INFORMATION

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Title of Invention:	WALL MEMBER AND METHOD OF CONSTRUCTION THEREOF
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TITLE: WALL MEMBER AND METHOD OF CONSTRUCTION THEREOF

TECHNICAL FIELD

The present invention relates to an improved wall, floor or ceiling and method of construction thereof.

BACKGROUND ART

There is a great demand in the building industry for a lightweight contemporary monolithic wall system as an alternative to traditional brick or block work at a more attractive price and offering greater design flexibility. There is also a great demand to reduce the time of construction of traditional masonry walling systems.

There are many lightweight stucco or "rendered" masonry lookalike systems utilising traditional stud framing covered with sheeting materials and rendered or coated to achieve a masonry appearance. Whilst these systems give the appearance of masonry they do not achieve the "feel" or solidarity of masonry.

There are also many masonry panel systems currently available. Generally, panels of this type are manufactured by filling the space between two adjacent fibre reinforced cement (FRC) sheets with a lightweight concrete core. These panel systems, however, are generally constructed off-site and incur substantial transport costs. Further, the panel themselves are quite heavy and require cranage or considerable man handling to install. The panels are also inflexible with regard to design, and are generally only being provided as a two-dimensional panel, leading to further costs for on-site cutting.

Conventional on-site production of cast concrete walls, floors or ceilings requires complex and bulky formwork, to define the desired wall, floor or ceiling which is then filled with a conventional concrete/aggregate mix. The heavy concrete/aggregate mix

places substantial stress on formwork and is unsuitable to produce lightweight walls, floors or ceilings. Further one has all the added difficulties associated with producing, transporting and installing such heavyweight material.

It is an object of the present invention to overcome or substantially ameliorate at least some of the disadvantages of the prior art.

DISCLOSURE OF THE INVENTION

Accordingly, the invention provides a method of constructing a wall, floor or ceiling in situ, wherein said method includes the steps of:

erecting a substantially rigid frame defining front and rear faces of a wall, floor or ceiling;

attaching fibre reinforced cementitious sheets to said front and rear faces, to form a void therebetween;

injecting a lightweight aggregate concrete slurry with a density between 200 kg/m^3 and 1800 kg/m^3 into said void;

and allowing said concrete slurry to set and cure;

wherein said sheets are adapted to absorb sufficient moisture to provide natural adherence of said concrete slurry to said sheets without substantially losing their structural integrity during setting and curing.

The present invention in a preferred form provides a method for constructing walls, floors or ceilings which has greater flexibility than current prefabricated systems and which is easier and cheaper to use than current conventional on-site systems while still retaining the desired look and feel of masonry.

Not all fibre reinforced cement sheets are suitable for the inventive process. Sheets which are suitable for use with the present inventive construction method are adapted to:

(i) absorb sufficient moisture to provide natural adherence of the concrete to the sheets following curing; and.

(ii) substantially maintain their structural integrity during curing.

Both the moisture permeability and/or thickness of the sheet(s) may be adjusted to meet these criteria.

As will be clear to persons skilled in the art, when the water borne lightweight aggregate concrete slurry is poured into the void between the sheets, the FRC sheets will absorb a certain quantity of water. This absorption of water is required so that as the concrete firstly sets then cures it naturally adheres to the cementitious sheets.

As the fibre cement sheets absorb moisture, they lose strength. If moisture absorption continues, the sheets may be weakened to such an extent that the weight of the slurry is sufficient to cause total loss of structural integrity of the sheets and escape of the cement slurry from the void between the sheets. The present applicants have surprisingly found, however, that it is possible to provide sheets which absorb sufficient moisture to allow for natural adherence of the concrete but which still substantially maintain their structural integrity during setting and curing of the concrete. This is particularly useful since it allows for production of lightweight walls, ceiling or floors on-site which give the solid feel and look of conventional masonry without the need for additional formwork or reinforcement of the sheets.